



*COMMONWEALTH of VIRGINIA*  
*DEPARTMENT OF ENVIRONMENTAL QUALITY*

November 3, 1994

**MEMORANDUM**

**SUBJECT:** Interpretation of the Water Quality Standard for Cyanide  
**TO:** Bill Kregloe,  
**FROM:** Jean Gregory OERS  
**DATE:** November 2, 1994  
**COPIES:** Alan Anthony, Elleanore Daub, Brad Chewning,  
Larry Lawson, Martin Ferguson, Fred Holt

OERS was asked to provide an interpretation of the cyanide standard and an acceptable method of measuring for compliance with the standard. The Virginia water quality standard for cyanide designed to protect aquatic life in freshwater is 22 ug/L acute and 5.2 ug/L chronic. When Virginia adopted the water quality standard for cyanide, the method of measurement was not specified. The basis for this aquatic life standard is the EPA water quality criteria document for cyanide (1984). In this document, EPA states "EPA believes that a measurement such as free cyanide would provide a more scientifically correct basis upon which to establish criteria for cyanide. The criteria were developed on this basis." However, since no EPA approved method for such a measurement existed, EPA recommended using the total cyanide method to implement the criteria in regulatory programs. EPA acknowledged that the use of total cyanide measurements to implement the criteria might be overly conservative in some situations.

A question has come up as to whether or not another method listed in 40 CFR 136, referred to as "cyanide amenable to chlorination" would be applicable to the standard. The answer is no. This method will measure the fraction of total cyanide that can be degraded by chlorination. We are unaware of any data to indicate that a measurement of cyanide amenable to chlorination is equivalent to "free cyanide" or in any quantifiable way relates to toxicity or bioavailability. In the absence of an acceptable method for measuring free cyanide, we must rely on the total cyanide method for use in applying the standard.